

Claims:

1-62 (canceled)

63. (Previously Presented) A valve comprising:

a valve body having a valve cavity therein;

a valve element for controlling flow through the valve based on a rotational position of the valve element about an axis of rotation, and

a single piece packing that surrounds said valve element; and seals said valve element within said valve cavity;

wherein said valve element comprises a ball and adjacent upper and lower cylindrical trunnions extending from the ball;

a lower end of said single piece packing seals directly against said lower cylindrical trunnion;

said lower cylindrical trunnion extending along said axis of rotation past a lowermost end of said packing;

said valve cavity including a reduced diameter counterbore being dimensioned to closely receive said lower cylindrical trunnion of said valve element, wherein a bottom end of the lower cylindrical trunnion is spaced apart along said axis of rotation from the reduced diameter counterbore to allow said valve element to shift in two opposite directions along said axis of rotation of the valve element.

64. (Previously Presented) A valve comprising:

a valve body having a valve cavity therein;

a valve element for controlling flow through the valve based on a rotational position of the valve element about an axis of rotation, and

a packing that surrounds said valve element and seals said valve element within said valve cavity;

wherein said valve element comprises a ball and adjacent upper and lower cylindrical trunnions extending from the ball;

said lower cylindrical trunnion extending along said axis of rotation past a lowermost end of said packing;

said valve cavity including a reduced diameter counterbore being dimensioned to closely receive said lower cylindrical trunnion of said valve element, wherein a bottom end of the lower cylindrical trunnion is spaced apart from the reduced diameter counterbore to allow said valve element to shift along said axis of rotation of the valve element in two opposite directions.

65. (Previously Presented) A valve comprising:

a valve body having a valve cavity therein;

a valve element for controlling flow through the valve based on a rotational position of the valve element about an axis of rotation;

a packing that surrounds said valve element and seals directly against said valve element within said valve cavity;

wherein said valve element comprises a ball and adjacent upper and lower trunnions;

said lower trunnion extending axially past a lowermost end of said packing;

load members that apply a load to the packing in a direction of the axis of rotation of the valve element over a range of temperatures while permitting said valve element to shift in two opposite directions along said axis of rotation of the valve element to compensate for temperature effects on said packing.

66-77. (Canceled)

78. (Previously Presented) A valve comprising:

a valve body having a valve cavity therein that includes a reduced diameter counterbore;

a valve element for controlling flow through the valve based on a rotational position of the valve element about an axis of rotation, and

a single piece packing that surrounds said valve element and has a cylindrical outer surface that is cylindrical about said axis of rotation of the valve element and seals said valve element within said valve cavity, said single piece packing having a height H and a diameter D4, wherein the diameter D4 is the diameter of the cylindrical outer surface and the height H is a distance the cylindrical outer surface extends along said axis of rotation from a bottom surface of the packing to an upper surface of the packing, wherein a ratio of H/D4 is 0.75 to 0.85;

wherein said valve element comprises a spherical ball, adjacent upper and lower cylindrical trunnions extending from said spherical ball along said axis of rotation, and a stem extending from the upper cylindrical trunnion for rotating said valve element about said axis of rotation, said stem having a smaller diameter than said upper trunnion, wherein the ball has a maximum outer diameter D1 and at least one of the trunnions has an outer diameter D3, wherein a ratio of D3/D1 is 0.7 to 0.9;

said lower trunnion extending axially past a lowermost end of said packing into said reduced diameter counterbore, wherein the reduced diameter counterbore is sized to form a clearance fit between the lower trunnion and the counterbore that prevents a lower portion of the packing from extruding into the counterbore;

wherein there is an axial gap between the reduced diameter counterbore and said lower trunnion that allows said valve element to axially shift in the valve cavity in two opposite directions.

79-93. (Canceled)

94. (New) A valve comprising:

a valve body having a valve cavity therein that includes a ball receiving cavity and a reduced diameter counterbore;

a valve element for controlling flow through the valve based on a rotational position of the valve element about an axis of rotation, wherein said valve element comprises a spherical ball, and an adjacent lower cylindrical trunnion extending from said spherical ball along said axis of rotation, and a stem for rotating said valve element about said axis of rotation;

a single piece packing that surrounds said valve element, wherein an outer surface of the single piece packing seals against the ball receiving cavity, and an internal surface of the packing seals against outside surfaces of the spherical ball and the lower cylindrical trunnion;

said lower trunnion extending axially past a lowermost end of said packing and into said reduced diameter counterbore, wherein the reduced diameter counterbore is sized to prevent a lower portion of the packing from extending into the reduced diameter counterbore;

wherein there is an axial gap between the reduced diameter counterbore and said lower trunnion that allows said valve element to axially shift in the valve cavity in two opposite directions to compensate for temperature effects on said packing.

95. (New) The valve of claim 94 wherein a lowermost surface of the single piece packing engages a lowermost surface of the valve cavity to prevent the packing from extending into the counterbore.

96. (New) A valve comprising:
a valve body having a valve cavity therein;
a valve element for controlling flow through the valve based on rotational position of the valve element about an axis, and
a packing that surrounds said valve element and seals said valve element within said valve cavity;
wherein said valve element comprises a ball and adjacent upper and lower trunnions;
said lower trunnion extending axially past a lower end of said packing;
said valve cavity being dimensioned to closely receive said valve element while permitting said valve element to axially shift in two opposite directions to compensate for temperature effects on said packing.

97. (New) The valve of claim 96, wherein the packing is a single piece packing that is dimensioned to be installed on said valve element within a room temperature range of 65 to 100 degrees Fahrenheit.

98. (New) The valve of claim 97, wherein said packing has a generally cylindrical outer surface defined by a height H and an outer diameter D4, said packing having a ratio H/D4 of 0.75 to 0.85.

99. (New) The valve of claim 97, wherein said ball has an outer diameter D1 and at least one of said trunnions having an outer diameter D3; wherein said valve element has a ratio D3/D1 of 0.7 to 0.9.

100. (New) The valve of claim 99, wherein said ratio D3/D1 is 0.8.

101. (New) The valve of claim 97, wherein said packing has a generally cylindrical outer surface defined by a height H and an outer diameter D4, said packing having a ratio H1/D4 of 0.75 to 0.85; and wherein said ball has an outer diameter D1 and at least one of said trunnions having an outer diameter D3, wherein said valve element has a ratio D3/D1 of 0.7 to 0.9.

102. (New) The valve of claim 96, wherein said packing comprises a polymer selected from the group comprising polytetrafluoroethylene (PTFE), polyethylene, polyetheretherketone (PEEK) and fluorinated ethylene propylene.

103. (New) The valve of claim 97, wherein said packing has an inner surface that forms an interference fit with said valve element when said packing is installed thereon prior to loading said packing within said valve body.